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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,995	02/21/2002	Mindaugas F. Dautartas	23091/16 (ACT-179)	1731

26086 7590 07/22/2003

HALEOS, INC.  
3150 STATE STREET  
BLACKSBURG, VA 24060

EXAMINER

WOOD, KEVIN S

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 07/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/081,995

Applicant(s)

DAUTARTAS, MINDAUGAS F.

Examiner

Kevin S Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6, 8, 9, 11-16 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 7 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: Brian Healy

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 100, 200, 300, 400, 500, 600, 700, 800. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 14 recites the limitation "the diffraction filter" in third line of the claim. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent No. 5,208,882 to Strasser et al.

Referring to claims 11-13, Strasser et al. discloses all the limitations of the claimed invention. Strasser et al. discloses an optical device comprising : a vertically tapered waveguide (14a); a diffraction grating (12a), wherein the waveguide and the diffraction grating are made from a monolithic optical material, and wherein the monolithic optical material is over a substrate (10a) common to both the waveguide and the diffraction grating.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 4, 6, 8, 9, 14-16, and 18-21 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,292,609 to Matsushima et al.

Referring to claims 1 and 6, Masushima et al. discloses a mask (2) situated between an optical waveguide material (6) to be shaped and a source of etchant ions,

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wherein the motion of the waveguide exposes at least two area of the optical waveguide material to variable amounts of etchant ions, thereby causing vertical thickness variations between the at least two areas. See figures of the reference along with their respective portions of the specification. Masushima et al. does not appear to specifically disclose that the mask moves relative to the waveguide. However, Fig. 7(a)-7(e) discloses what appears to be a stationary waveguide (40), while showing the etching region move from a first area (22) to second area (23) of the waveguide. Based on this, it would have been obvious to one having ordinary skill in the art at the time the invention was made the waveguide could be moved relative to the etching mask or the etching mask could be moved relative to the waveguide, in order to produce a tapered area of the waveguide. It does not appear to be a patentable difference to rearrange which component is moving relative to another component, the process still remains the same.

Referring to claim 4, Masushima et al. discloses that the mask (2) has a slit (21). See Fig. 3-4.

Referring to claims 8 and 9, Masushima et al. discloses the relative motion between the mask and the waveguide may be linear or reciprocating. See Fig. 7(a)-7(b).

Referring to claims 14, 15 and 21, Masushima et al. discloses a method of forming a waveguide vertical taper including: forming a silicon waveguide (6,40); disposing the waveguide below a mask (2), moving the waveguide while exposing the waveguide to a directional etching process, so that a vertical taper is formed in the waveguide. See figures of the reference along with their respective portions of the

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specification. Masushima et al. does not appear to specifically disclose that the mask moves relative to the waveguide. However, Fig. 7(a)-7(e) discloses what appears to be a stationary waveguide (40), while showing the etching region move from a first area (22) to second area (23) of the waveguide. Based on this, it would have been obvious to one having ordinary skill in the art at the time the invention was made the waveguide could be moved relative to the etching mask or the etching mask could be moved relative to the waveguide, in order to produce a tapered area of the waveguide. It does not appear to be a patentable difference to rearrange which component is moving relative to another component, the process still remains the same.

Referring to claims 16, Masushima et al. discloses a method of forming a waveguide vertical taper including the etching process being reactive ion etching (RIE). See the portion of the specification for Fig. 20(e).

Referring to claim 18, Masushima et al. discloses all the limitations of the claimed invention except Matsushima et al. does not appear to disclose that the mask is up to 250 microns above the waveguide. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a certain spacing for the mask relative to the waveguide, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233

Referring to claim 19, Masushima et al. discloses all the limitations of the claimed invention except Matsushima et al. does not appear to disclose that the mask moves a distance of 50 to 1000 microns. It would have been obvious to one having ordinary skill

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in the art at the time the invention was made to select a certain range of movement for the mask relative to the waveguide, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Referring to claim 20, Masushima et al. discloses that the taper starts a zero microns. See the figures of the reference.

### ***Allowable Subject Matter***

8. Claim 10 is allowed.

9. Claims 2, 3, 5, 7 and 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claims 2 and 3, the prior art does not disclose the combination of all the limitations of the claimed invention. The prior art does not disclose a method for manufacturing an optical device where a comb shaped mask is moved between an source of etchant ions and an optical waveguide to form vertical thickness variations of the waveguide.

Referring to claim 5, the prior art does not disclose the combination of all the limitations of the claimed invention. The prior art does not disclose a method for

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manufacturing an optical device where the method includes a second mask, the second mask being stationary.

Referring to claim 7, the prior art does not disclose the combination of all the limitations of the claimed invention. The prior art does not disclose a method for manufacturing an optical device where a diffraction grating is produced.

Referring to claim 10, the prior art does not disclose the combination of all the limitations of the claimed invention. The prior art does not disclose a method for micromachining including etching through a reciprocating comb mask to produce a desired sidewall shape in an optical material.

Referring to claim 17, the prior art does not disclose the combination of all the limitations of the claimed invention. The prior art does not disclose that the mask is in contact with the waveguide.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (703) 605-5296. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 307-0956.

KSW  
July 10, 2003



Brian Healy  
Primary Examiner